

What is claimed is:

- 5 1. A transparent amorphous silicon dioxide film
containing a large number of fine voids and showing a re-
fractive index for light at $\lambda = 500$ nm in the range of
1.01 to 1.40, wherein 80 vol.% or more of the fine voids
have diameters of 5 nm or less.
- 10 2. The amorphous silicon dioxide film of claim 1,
which has a void volume ratio of 50% or more.
- 15 3. The amorphous silicon dioxide film of claim 1,
wherein 80 vol.% or more of the fine voids have diameters
of 2 nm or less.
- 20 4. The amorphous silicon dioxide film of claim 1,
wherein 90 vol.% or more of the fine voids have diameters
of 2 nm or less.
- 25 5. The amorphous silicon dioxide film of claim 1,
which is a product obtained by firing a film formed ac-
cording to a sol-gel process.
- 30 6. A process for preparation of the amorphous
silicon dioxide film of claim 1, comprising the steps of:
 subjecting a silicon alkoxide to hydrolysis and con-
densation-polymerization in an alcoholic solvent in the
presence of water and at least one compound selected from
the group consisting of hydroxyaldehyde compounds, hy-
droxycarboxylic acid compounds, allyl alcohol compounds
and hydroxynitrile compounds, to prepare sol;
 forming the sol to produce a film, and
35 firing the film.

7. The process of claim 6, wherein the step for
subjecting the silicon alkoxide to hydrolysis and conden-
sation polymerization is performed further in the pres-
ence of at least one salt catalyst selected from the
5 group consisting of salts between weak acids and weak
bases, salts of hydrazine compounds, salts of hydroxyl-
amine compounds and salts of amidine compounds.